STATEMENT OF BASIS

for

General Motors
Power Train Foundry Division
Defiance, Ohio
EPA I.D. No. OHD 005 050 273

April 26, 2004

Table of Contents

Statement of Basis for the Proposed Remedy at the General Motors Power Train Foundry Division Facility Located in Defiance, Ohio

INTRODUCTION

This Statement of Basis (SB) explains the proposed remedy for contaminated soil and groundwater at the General Motors Power Train Foundry Division Facility. In addition, the SB includes summaries of all corrective measure scenarios evaluated by General Motors. The United States Environmental Protection Agency (U.S. EPA) will select a final remedy for the General Motors Facility only after the public comment period has ended and the information provided by the public has been reviewed and substantive comments considered.

This SB is being issued by U.S. EPA as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA). The document summarizes information that can be found in greater detail in the final RCRA Facility Investigation (RFI) and Corrective Measure Study (CMS) Reports and other pertinent documents contained in the Administrative Record. U.S. EPA encourages the public to review these documents in order to gain a more comprehensive understanding of the General Motors Facility and the RCRA activities that have been conducted.

U.S. EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all corrective measure scenarios. The public can participate in the remedy selection process by reviewing the documents contained in the Administrative Record.

PROPOSED REMEDY

The U.S. EPA is proposing the following remedy to address the contaminated media at and from the GM-Defiance Facility:

- **No Further Action, With Future Land Use Unrestricted**.

  Based on the investigation conducted under the RFI, no further action was warranted at four Areas of Interest (AOIs), (AOI 4- East Primary Settling Basin, AOI 11- Treatment Gondolas, AOI 26 - Material Handling/Unloading and Storage Areas, and AOI 27- Aboveground Storage Tanks). Data indicate that constituent concentrations at these AOIs are lower than screening criteria based on residential land use.

- **No Further Remediation, With Future Land Use Suitable for Industrial Use, Including Institutional Controls Restricting the Contaminated Portions of the Facility to Industrial Use**.

  Based on the investigation conducted under the RFI, no further remediation was warranted at six Areas Of Interest (AOIs), (AOI 5 - West Primary Settling Basin, AOI 6 - Secondary Settling Basin Ditch, AOI 10 - Waste Oil Storage Areas, AOI 13 - Drainage Ditch, AOI 19 - Former Disposal Area, and AOI 21 - Scrap Metal Handling Areas). Data indicate that concentrations at these AOIs are lower than screening criteria based on industrial land use. Based on low detected levels of concentrations collected upstream for the primary settling basins (AOIs 4 and 5), no further remediation was warranted at AOI 16 - Water Reservoir.

  Additionally, GM-Defiance will place a notation on the deed for the property that designates areas of the facility that have been impacted by previous activities. The deed restrictions will be placed on these areas to ensure continued industrial use. For ease in administration, the deed restriction will encompass the main operational portions of the plant buildings and yards.

  Interim corrective measures have been completed at AOI 20 - Underground Storage Tanks (USTs) , Associated Piping in Former Maintenance Area, AOI 22 - Brown Boveri Coreless Induction Melt Furnace (BBC) Area, AOI 23 - AJAX Furnace Area, and AOI 24 - Other PCB Releases in Electrical Substations and have reduced contaminant levels below the screening criteria for industrial use. These areas will be suitable for Industrial land use only, and will be deed restricted.

- **Implementation of a Perched Water Zone Monitoring Program with Contingency Plans.**

  GM-Defiance must monitor perched water (1) to ensure that human beings are not exposed to unacceptable levels of groundwater contamination, (2) to verify whether the existing measures effectively control or eliminate the sources of the perched water contamination, and (3) to assess movement of the contaminated perched water to ensure that it does not migrate out of the containment zone where it currently exists.

  The perched water zone monitoring program must include collecting samples from GM-Defiance's shallow monitoring wells on a quarterly basis for a minimum of two years, analyzing the samples for the compounds of interest, identifying trends through statistical analysis of the results, and submitting quarterly reports to the U.S. EPA. The compounds of interest are total

and dissolved arsenic, manganese, lead, thallium; and pentachlorophenol. U.S. EPA will review the data in comparison to surface water quality standards specific to the watershed and/or drainage basin published in the Ohio Environmental Regulations (Ohio Administrative Code - 3745). In two years, following the conclusion of this sampling period, GM and EPA will review the data in comparison to the Ohio Surface Water Quality standards to determine if the perched water zone is impacting the Maumee River. At that time, the decision will be made whether to suspend the sampling (if no impact to surface water can be demonstrated), to adjust the sampling frequency (if continued sampling is determined to be necessary), or to develop contingency plans if perched water contaminant concentrations increase or significant migration is noted. The specific contingency plans will be outlined in the Corrective Measures Implementation report that GM-Defiance will prepare after the Agency has chosen the final remedy. Identifying specific measures to take is not reasonable at this stage; future quarterly sampling results will dictate those measures to follow; however, GM-Defiance must protect human health and the environment from adverse effects. Possible remedies include active remediation of the perched water or containment.

A more detailed discussion of the RFI/CMS, the interim measures, and U.S. EPA's proposed remedy is provided in the following sections.

FACILITY BACKGROUND

The General Motors Facility is located at 26427 State Route 281 East, Defiance County, Ohio, approximately 60 miles southwest of Toledo. The Facility lies immediately south of the Maumee River and east of the incorporated boundary of the City of Defiance, Ohio on approximately 430 acres of land, as presented on Figure 1.1. Foundry operations began at the Facility in 1948 and include the manufacture of grey and nodular iron castings of engine blocks and other power train components for automotive, truck, and industrial uses. Startup testing for lost foam aluminum production was initiated in 2002, and full production is anticipated in the future.

Current Operations

Plant 1 produces grey iron castings, including diesel and gasoline engine blocks and heads. Plant 2W produces nodular iron castings, primary crankshafts and differential carriers. Plant 2E is not currently in production and is being retooled for casting of aluminum engine heads and blocks. The following manufacturing processes are used:

Mold Processes: Mold mix slurry is produced outside of Plants 1 and 2W. The mold material distribution systems transport the slurry form the slurry buildings outside of Plant 1(north of the "supermarket") and Plant 2W (beside the sand silos) to the green sand system in each plant, where new and/or returned sand is blended with additives (including bentonite and sea coal) and the mold mix. After iron castings have been removed from the molds, spent cores and sand lumps are screened out of the return sand, and new sand is added to account for these losses.

Core Processes: Cold box core-making is used in Plant 1 and consists of placing a mixture of sand and resin in the box and blowing reactive gas (which acts as a catalyst) through this mixture. Hot box core-making is used in Plants 1 and 2W and consists of curing a mixture of sand, acid catalyst, and liquid core binder in a heated box. Shell core-making is used in Plant 2W and consists of curing a mixture of sand, phenol-formaldehyde resin, and hexamethylene-tetramine hardening agent in a heated box.

Melt Operations: In Plant 1, charge materials (scrap, sprue, coke, alloys, fluorspar, and limestone) are melted in Cupola 3 (plasma arc) and Cupola 4 (conventional). The resulting molten grey iron is transferred to induction holding furnaces and distributed to transfer ladles. In Plant 2W, charge materials (scrap, pig iron, coke, fluorspar, and limestone) are melted in Cupolas 6E and 6W (conventional). The resulting molten metal is desulfurized using calcium oxide/calcium fluoride to form nodular (ductile) iron, transferred to induction holding furnaces, and distributed to transfer ladles. Prior to dismantling the equipment in Plant 2E, scrap materials were melted directly in six induction furnaces and distributed to transfer ladles.

Casting Cleaning and Finishing: In Plant 1, residual sands are removed in blasting cabinets and/or media cleaners and excess metals are removed by grinding and hand cleaning. In Plant 2W, residual sands are removed in blasting cabinets, and excess metals are removed by milling/broaching, grinding, and/or hand cleaning.

Dust Collection: Dusts generated from the melting areas and sand systems are collected by wet and dry dust collection systems and waste waters are routed to the East Primary Settling Basin (AOI 4). Excess and emergency overflow is routed to the Secondary Settling Basin (SSB) (AOI 6) during peak periods. Air emissions from the cupolas are routed through wet caps prior to venturi scrubbing and mist eliminators. Waste waters from these processes are routed to the SSB.

Current Waste Management Practices

Hazardous wastes currently generated at the Facility include approximately 800 gallons per month of waste petroleum naphta from 27 small parts washers and four larger parts washers, waste sulfuric acid from triethylamine (TEA)-gas scrubbers, waste potassium hydroxide from sand core additives, baghouse dust and filters, and lead paint. The TEA-gas scrubbers are chemical adsorption towers, which employ sulfuric acid to remove amines form the system. All of the waste streams are accumulated at the New Storage Area (AOI 9) located to the northwest of Plant 1, with the exception of petroleum naptha from the parts washers (which is managed by Safety-Kleen). All hazardous wastes are properly disposed of or recycled off site.

Certain non-hazardous wastes generated at the Facility are disposed off site by contractors to private licensed disposal sites, including waste oils, polychlorinated biphenyl (PCB) contaminated wastes from remediation projects, asbestos containing wastes, construction debris, food packaging waste, and office wastes.

There are six main sources of non-hazardous waste that are landfilled on site in accordance with Ohio EPA approvals and applicable permits, namely exempt foundry waste requiring metal reclamation (EMR), exempt foundry waste not requiring metal reclamation (EFW), non-exempt foundry wastet requiring metal reclamation (NMR), non-exempt foundry waste not requiring metal reclamation (NFW) , non-exempt sludge from the settling basins (AOI-4, AOI-5, and AOI-6), and exempt quench slag (QS). These waste streams are separated within holding areas in Plants 1 and 2W. EMR waste undergoes metal reclamation in the exempt waste metal reclamation area and is stockpiled in the exempt foundry waste stockpile area, with the EFW waste. NMR waste undergoes metal reclamation in the non-exempt waste metal reclamation area, NFW waste is reduced in size in the core waste crushing area, and non-exempt sludge is draglined or dredged from the settling basins. These wastes are subsequently hauled to the mixing area for the residual waste landfill and mixed at a maximum ratio of 40 percent non-exempt foundry waste and 60 percent sludge. The mixed waste has a permeability of 10^{-6} to 10^{-8} cm/sec. Quench slag waste is stockpiled in the quench slag waste pile (AOI 17). Except for purposes of the Environmental Indicator Determinations required in Section VI (2) of the Order, the Landfill (AOI 7) is excluded from the Order, provided that GM is in compliance with the obligations of applicable state of Ohio regulations (per Section VI (5) of the Order). GM continues to operate the residual waste landfill in compliance with applicable State of Ohio regulations. Therefore, the operation of the Landfill is not addressed in the RFI.

Wastewater treatment is performed in four basins in the northwestern portion of the Facility. The SSB (AOI 6) receives wastewater via two hard piped underground lines. The west pipe conveys storm water and wastewater from wet emission control systems associated with the cupola, slag quenching , and core making operations in Plant 1. The east pipe conveys storm water and wastewater from wet emission control systems associated with the cupola operations in Plant 2W and formerly conveyed wastewater from other foundry operations in Plant 2E. In addition, the SSB receives runoff from most of the Facility, leachate from the Landfill (AOI 7), discharge from the TEA-gas scrubbers and cleanouts from the dip tanks. The water from the SSB flows to the Water Reservoir (AOI 16), with the emergency overflow being discharged to the Maumee River via Outfall 002. Discharges from Outfall 002 occur on average once per year, for less than 24 hours. The last discharges occurred in April and May 1999. The total discharge from Outfall 002 during 1999 was 79,000 gallons and the NPDES permit limits were not exceeded. The East Primary Settling Basin (AOI 4) receives wastewater from the dust collection systems over the modeling sand systems in Plants 1 and 2W. Water from the East Primary Settling Basin flows into the West Primary Settling Basin (AOI 5) and subsequently flows into the Water Reservoir (AOI 16).

Solids are removed from the basins using a dragline or dredge, de-watered beside the basin, taken to the mix area and combined with non-exempt sand, and disposed of in the Landfill (AOI 7).

A portion of the water from the Water Reservoir (AOI 16) is pumped directly to Plants 1 and 2W for reuse and the remainder is treated at the Facility wastewater treatment plant (WTP) prior to reuse or discharge to the Maumee River via Outfall 001. All water treated at the WTP undergoes pH adjustment using sodium hydroxide, polymer flocculent addition, and filtration using sand filters.
After filtration, the water to be reused (service water) is softened and pumped to Plants 1 and 2W. After filtration, the water to be discharged to the river (blowdown) is treated to remove metals using ion exchangers, and may be treated with activated carbon adsorption to remove phenols, if necessary. A maximum of 2 million gallons of water per day can be treated at the WTP.

Historical Waste Management Practices

The first waste characterization study at the Facility was conducted in 1977. A more extensive waste characterization study was completed in June 1981, to identify all wastes and to determine whether any were hazardous. This study determined that only two hazardous waste streams were generated in 1981, namely, 1,1,1-trichloroethane (1,1,1-TCA) degreasing sludge (F001) and Calcium Carbide Disulfurization Slag (CCDS) (D001). 1,1,1-TCA was replaced with petroleum naptha in 1989. CCDS generation was discontinued in 1987. Waste characterization studies were completed on other occasions in the 1980s and have been conducted annually since 1995. These studies have identified other hazardous waste steams that have been generated at the Facility, including various caustic materials (including parts cleaners), and corrosive materials (including batteries, waste sulfuric acid, and waste hydrochloric acid). Most hazardous waste steams were stored in the Old Storage Area (AOI 8) prior to 1985 or the New Storage Area (AOI 9) since 1985, which were both located to the northwest of Plant 1. Waste oil was stored in the Waste Oil Storage Area(s) (AOI 10) north of Plant 1 and may also have stored north of Plant 2E. All hazardous wastes were disposed of or recycled off site, with the exception of the CCDS, which was treated and disposed of on-site.

The first settling basin to be constructed was the West Primary Settling Basin (AOI5), in 1952. The East Primary Settling Basin (AOI 4) was constructed in 1963, due to sludge buildup in the West Primary Settling Basin. The SSB (AOI 6) was constructed in 1968 to accommodate increased emission control waste waters, mainly due to the installation of the venturi systems over the cupolas in the late 1960s. The settling basins have been dredged on a regular basis since the 1970s . The WTP was constructed in 1988 in order to comply with the National Pollutant Discharge Elimination System (NPDES) permit. It had an added benefit of reducing the amount of city water required, since water could be treated and reused.

RCRA Regulatory History

RCRA Section 3008(h) Streamlined Consent Order - In August, 1999 EPA issued a streamlined RCRA Section 3008(h) order to the General Motors (GM) facility in Defiance, Ohio. Operations at the automobile assembly facility had caused soil and perched water in the fill material to be impacted by volatile organic compounds among other contaminants. Two years after the order was issued, GM-Defiance received Ye determinations for their Environmental Indicators (E.I.'s), meaning all current human exposures to contamination at or from the facility were under control and the migration of contaminated perched water at or from the facility was defined. A year after that, GM proposed the final cleanup measures for the facility. Under this performance based order, the requirements were met more quickly and with less agency oversight than under a traditional consent order.

The following activities associated with RCRA Corrective Action have been completed to date:

- The effective date of the Administrative Order on Consent for RCRA Corrective Action between GM and U.S. EPA is September 2, 1999.
- The Current Conditions Report was submitted to U.S. EPA on October 29, 1999.
- A pre-RCRA Facility Investigation (RFI) investigation was conducted in February 2000 in an area of the Facility slated for redevelopment. The RCRA Facility Investigation (RFI) Work Plan was submitted to U.S. EPA on April 20, 2000. RFI field work was conducted between May 2000 and March 2001.
- The Environmental Indicators Report was submitted to U.S. EPA on August 30, 2001.
- The RFI Report was submitted to U.S. EPA on August 31, 2001.
- The Interim Measures Work Plan for AOI 20, the former underground storage tanks (USTs) and associated piping in the former maintenance area, was submitted to U.S. EPA on April 19, 2001. Investigations were conducted between July 2000 and March 2001, and the interim measures were completed between June 2001 and August 2001. The Interim Measures Report (CRA, August 15,2002) was submitted to U.S. EPA on August 22, 2002.
- The Interim Corrective Measures Work Plan for AOI 22 BBC furnace area, (CRA, August 15, 2002) was submitted to U.S. EPA on August 23, 2002.
- The Interim Measures Work Plan for AOI 23, AJAX furnace area, was submitted to U.S. EPA on November 8, 2000. Investigations were conducted between August 2000 and January 2001, and the interim measures were completed between March 2001 and October 2001. The Interim Measures Report (CRA, August 16, 2002) was submitted to U.S. EPA on August 22, 2002.
- The Interim Measures Work Plan for AOI 24, Electrical Substations, was submitted to U. S. EPA on November 8, 2000. Investigations were conducted between May 2000 and February 2001, and the interim measures were completed between July 2001 and August 2001. The Interim Measures Report (CRA, August 15, 2002) was submitted to U.S. EPA on August 22, 2002.

A summary of the results of the RCRA Facility Investigation Report, Interim Corrective Measures, and the Corrective Measures Proposal Report follows.

Interim Corrective Measures

Interim corrective measures were performed at AOI- 20 Underground Storage Tanks (USTs) and

Associated Piping, AOI-22 Furnace Area, AOI-23 Ajax Furnace Area, AOI-24 Other Potential PCB Releases. Further discussions of these areas of interest are provided in the "Areas of Interest with Interim Corrective Measures" section of this document, on page 19.

AOI 20-USTs and Associated Piping

- Soil surrounding bore hole (BH)75-01, a 3-inch sanitary sewer, and an oil overflow line was excavated in June 2001. The concrete floor, approximately 30 feet of a 3-inch sanitary sewer line, approximately 6 feet of an oil overflow line, and impacted soil and liquids containing free product were containerized, characterized, and disposed of off site.
- Stone from the sand interceptor and liquids from the sand interceptor and oil interceptor were removed in June 2001 and were containerized, characterized, and disposed of off site.
- Soil surrounding bore holes BH63-00, BH69-01, and BH71-01 was excavated in July 2001. The concrete floor, and impacted soil and liquids from the excavation were containerized, characterized, and disposed of off site.
- As discussed in the RFI Report and Environmental Indicators (EI) Report, the post-excavation residual concentrations in soil at the AOI-20 area have 95% upper confidence limits (UCLs) that are lower than the risk-based screening criteria, which means that the residual concentrations would not cause unacceptable exposure of workers who might work in the area. Based on these results, the excavated areas were backfilled.
- After the excavations were backfilled in June and July 2001, a 6-inch concrete slab floor was placed to match the existing floor. A training center was then constructed in this area. Construction of the training area included covering portions of the floor with epoxy grout or oil-resistant coating, and providing ventilation in accordance with building codes applicable to the use of the area as a combination of office space and industrial work space.

AOI 22-BBC Furnace Area

- Applicable surfaces (floors in the hydraulic rooms, old capacitor room, new capacitor room, walls and floors in furnace pits, and furnace cradles) were cleaned in accordance with the double wash/rinse procedure specified in 40 CFR 761.360 to 761.378 "Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces". This procedure is specified for decontaminating concrete for continued use in accordance with 40 CFR 761.30(p).
- Four furnace cradles located in the BBC furnace area were removed for disposal according to 40 CFR Part 761.
- After cleaning, the four furnace pits were tested for PCB contamination. One concrete core sample from each of the four walls and one concrete core sample from the floor was taken. The samples collected were analyzed for PCBs. Following sample analysis, if PCB concentrations greater than 50 ppm were discovered, the floors of the pit were covered with 9 to 12 inches of concrete to encapsulate the PCB-contaminated concrete and/or the walls were encapsulated with a coating identified below. If PCB concentrations were less than 50 ppm, no corrective action was implemented.
- Specified floor surfaces (hydraulic room H3/4, old capacitor room, and new capacitor room) were completely encapsulated with two contrasting colors of solvent-resistant and water-repellant coatings, to prevent release of PCBs. The contrasting colors allowed a visual indication of wear or loss of outer coating integrity.
- All areas with encapsulated surfaces and any concrete contaminated with PCB concentrations greater than 25ppm and less than or equal to 50 ppm in the BBC furnace area, including the furnace pits, were marked with the M_L mark in a location easily visible to individuals in the area.

CFR 40 761.30(p) authorizes the use of PCB contaminated concrete at any concentration (over 1 ppm) if they mark the area with a PCB label (refered to as an M_L mark) and conduct a double wash of the concrete followed by covering the concrete with either two coats of contrasting colored epoxy or a solid barrier. M_L marks will be replaced when worn or illegible.

- The BBC furnace rooms will be used for the remainder of the useful life of the Facility. If concrete, metal, or equipment is removed from the BBC Furnace Area, it will be disposed of in accordance with 40 CFR 761.61 "PCB Remediation Waste" or decontaminated in accordance with 761.79 "Decontamination Standards and Procedures".

AOI 23-Ajax Furnace Area

- All access points (i.e., drains) were plugged and the trench drain filled with flowable fill prior to cleaning.
- Five metal cradles and steel walls from furnace rooms were cleaned and removed for disposal according to 40 CFR Part 761. Furnace jacks and refractory brick were also removed for disposal according to 40 CFR Part 761.
- Concrete walls and floors were cleaned and flowable fill (cement-bentonite grout) was poured to a depth of 1 foot in all rooms to prevent potential migration of PCBs from the area.
- The ceilings and upper walls in each room of the AJAX furnace area were demolished. The basement was backfilled and compacted using foundry sand and crushed concrete from demolition of the ceilings and upper walls.
- A 6-inch rough finished concrete cap was constructed over the AJAX furnace area and an additional 9- to 12-inch concrete floor was subsequently constructed on December 8, 2001.

AOI-24-Other Potential PCB Releases

- The concrete floor surfaces of transformer substation E1/E2, and H5/H6 located in the foundry and M1/M2 located in Plant 1 were decontaminated in accordance with the double wash/rinse procedure specified in 40 CFR 761.360 to 761.378 "Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces". This procedure is specified for decontaminating concrete for continued use in accordance with 40 CFR 761.30(p).
- The concrete floor surfaces of transformer substation E1/E2, H5/H6, and M1/M2 were completely encapsulated with two contrasting colors of solvent resistant and water repellant coatings, to prevent release of PCBs. The contrasting colors will allow a visual indication of wear or loss of outer coating integrity.
- Each area was marked with the M_L mark in a location easily visible to individuals in the area. M_L marks will be replaced when worn or illegible.
- The transformer substations will be used for the remainder of the useful life of the Facility. If concrete is removed from the area, it will be disposed in accordance with 40 CFR 761.61 "PCB Remediation Waste" or decontaminated in accordance with 761.79 "Decontamination Standards and Procedures".

AOIs Excluded From The Orders

Three AOIs (AOI 7- Landfill, AOI 12-Sedimentation Basin, and AOI 18-North Perimeter Area) were excluded from the Order (except for the EI Report) because the landfill and associated sedimentation

basins are operating under and Ohio Environmental Protection Agency (Ohio EPA) permit and the North Perimeter Area is undergoing RCRA closure with Ohio EPA.

AOI 7- Landfill

The Landfill covers approximately 130 acres in the northeast portion of the Facility, and is divided into Areas I, II, III. The Landfill has a drainage ditch on the north, south, and east slopes. A toe collection system along the northern edge of the Facility collects leachate between the waste and the river and routes it to the Waste Treatment Plant via the Secondary Settling Basin (SSB) AOI 6.

Area I has been used for disposal of foundry process wastes and settling basin sludge since the land was purchased in 1974. It was constructed with a 2-foot clay liner and an 18-inch granular drainage blanket, and contains an under drain system and two decant overflows that discharge into Area II. Areas II and III have been used since the 1950s; Area II for disposal of general foundry wastes, and Area III for basin sludge disposal, general debris, and metal reclamation operations. Prior to formal use of the Landfill, foundry sand was placed behind Plant 1.

The Landfill operated under local operating permits in the 1970s, was regulated by the County Board of Health and Ohio EPA after 1979, and is currently regulated under a Landfill Permit-to-install (PTI) submitted in April 1992, issued on January 18, 1995 and modified on May 12, 2000 and November 28, 2001. Subject to the Environmental Indicator Demonstrations required in Section VI(2), the Landfill is excluded from the Order, provided that GM is in compliance with the obligations of applicable state of Ohio regulations (per Section VI(5) of the Order). Therefore, this area was not considered further in the RFI.

AOI 12-Sedimentation Basin

The first Sedimentation Basin was constructed to the northeast of Landfill Area II in 1974. It received runoff from the Landfill and discharged directly to the Maumee River. Landfill Area I was constructed over this area and a second Sedimentation Basin was constructed in approximately 1981 to the southeast of Landfill Area II. The third Sedimentation Basin was constructed in 1986. It receives runoff from Landfill Area II was constructed over the second Sedimentation Basin in approximately 1990.

The sedimentation basins operated as part of the Landfill (AOI 7). The Landfill operated under local operating permits in the 1970s, was regulated by the County Board of Health and Ohio EPA after 1979, and is currently regulated under a Landfill Permit-to-Install (PTI) submitted in April 1992, issued on January 18, 1995 and modified on May 12, 2000 and November 28, 2001. Subject to the Environmental Indicator Demonstrations required in Section VI(2), the Landfill is excluded from the Order, provided that GM is compliance with the obligations of applicable state of Ohio regulations (per Section VI(5) of the Order). Therefore, this area was not considered further in the RFI.

AOI 18-North Perimeter Area

The North Perimeter Area (NPA) covers approximately 10 acres between the Maumee River and the SSB (AOI 6). This area was constructed in the mid-1960s as a settling basin and consists of a natural area of depression with a clay base and is surrounded by dikes constructed of foundry sand residual waste.

Periodically, sludge accumulated in the SSB to the point where it began to reduce the settling effectiveness of the basin. The sludge was then hydraulically dredged and deposited in the NPA, and Landfill (AOI 7). During 1985 through 1986, foundry waste was placed over the dredged sludge in the NPA. Based on sampling conducted between 1988 and 1995, it is estimated that the NPA contains approximately 320,000 cubic yards of sludge from the SSB, approximately 260,000 cubic yards of which is expected to contain lead above EP Toxicity criteria.

Subject to the Environmental Indicator Demonstrations required in Section VI(2), the NPA is excluded from the Order, provided that Ohio EPA and GM are making reasonable progress regarding closure (per Section VI(5) of the Order). The director of Ohio EPA approved the closure plan for the NPA in January 2002, and the project was started in April 2002. The project construction activities were completed in January 2003. The official closure of this unit is expected by the end of 2004. Therefore, this area was not considered further in the RFI.

INVESTIGATION RESULTS

AOIs Suitable for Unrestricted Land Use Without Further Remediation

Based on the investigation conducted under the RFI, no further remediation was warranted at four AOIs (AOI 4- East Primary Settling Basin, AOI 11- Treatment Gondolas, AOI 26 - Material Handling/Unloading and Storage Areas, and AOI 27- Aboveground Storage Tanks). The RFI data was screened against the Region 9 Preliminary Remedial Goals (PRGs), for acceptable levels of contaminants present in soil for the residential exposure scenario. The RFI data was compared to adjusted PRG levels of 10^{-5} or 1 in 100,000 probability of excess incremental cancer risk from carcinogens, and a Hazard Quotient of 1 for non-carcinogenic constituents.

The Region 9 PRGs have been adjusted to reflect the number of chemicals that are present at each area of interest (AOI) on site. EPA Region 9 calculates the PRGs using a target cancer risk of 10^{-6} and a target hazard quotient (HQ) of 1. According to the PRGs, a target cancer risk of 10^{-6} is often used to develop screening criteria to ensure that cumulative cancer risk from exposure to multiple human carcinogens at a site would not exceed EPA's acceptable cumulative risk goal of 10^{-4}. This means that as many as 100 human carcinogens can be present at a site at concentrations equal to the PRGs without exceeding the cumulative risk goal of 10^{-4}.

However, potential exposure to human carcinogens at the GM-Defiance site involve far fewer than 100 constituents. This means, the PRGs calculated using a target cancer risk of 10^{-6} are more conservative than necessary to protect for simultaneous exposures to multiple carcinogens. As such, the risk-based screening criteria for carcinogens are calculated using a target cancer risk of 10^{-5}, which is acceptable. The RFI data indicate that concentrations at these AOIs are lower than adjusted PRG levels of 10^{-5} or 1 in 100,000 probability of excess incremental cancer risk from carcinogens, and a Hazard Quotient of 1 for non-carcinogenic constituent, for residential land use.

<u>AOI 4-East Primary Settling Basin</u>

The East Primary Settling Basin began operating in 1963 and was built on foundry waste that had been placed in the area since 1948. It receives water from dust collectors through an overhead pipe from Plants 1 and 2W, and formerly from Plant 2E. Ferric sulfate was formerly added as a flocculent.

This unit is currently operating, and closure is not anticipated. Overhead pipes empty into a small area

approximately 100 feet from the basin. Chlorine dioxide is added periodically as an algaecide. A drag line is located at the south end of the East Primary Settling Basin. The remainder of the basin is dredged on an as-needed basis to maintain the required volume. Sludge removed from this basin is regularly sampled for six metals (chromium, copper, lead, manganese, nickel, and zinc) prior to dewatering and disposal in the Landfill (AOI 7).

Analytical results for the sediment and soil samples collected from the East Primary Settling Basin identified low concentrations of various volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and PCBs, and concentrations of various metals. VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the sediment.

AOI 11 – Treatment Gondola Staging Area

Between 1975 and 1987, calcium carbide was added to reduce the sulfur level in molten iron, thereby improving ductility of nodular iron. The CCDS generated by this process contained 1 to 3 percent unreacted calcium carbide and was considered a RCRA hazardous waste (D003) due to the potential for generation of acetylene gas. Use of calcium oxide/calcium fluoride replaced calcium carbide in the desulfurization process, and a non-reactive slag has been produced since December 1987.

Between 1975 and 1984, the Treatment Gondolas were used to collect CCDS, staged outside Plant 2W, and hauled to the Eastern Stage I Bunker and dumped. Other vehicles were used to transport CCDS to the Stage II Treatment Area. Between 1984 and 1987, CCDS was hauled directly to the Stage II Treatment Area. The Treatment Gondolas have not been used for CCDS since December 1987. The gondolas were cut up as scrap and used as charge material in the cupolas.

Analytical results for the soil samples collected from the Treatment Gondola Staging Area identified concentrations of various metals. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for residential exposure at this AOI.

AOI 26 – Material Handling/Unloading and Storage Areas

Various materials have been stored at the Facility, primarily in the area to the north of Plants 1, 2E, and 2W, and south of the settling basins. Materials stored at the Facility have included paper and cardboard, empty drums, wooden pallets, scrap equipment, scrap metal, coke, coal, sea coal, and general debris.

Various spills have occurred during the course of operations at the Facility. These have generally been cleaned up promptly in accordance with normal housekeeping procedures at the time. Known spills have included gasoline cetron (100 gallons), triethylamine (30 gallons at Line 5 TV gate), hydraulic oil (various), gasoline (various), diesel fuel (various), phosphoric acid (300 gallons at west ditch), mercury (6 ounces), sulfuric acid (various in core room), binder catalysts (various in core room), resins (various in core room), cutting oil (various drained from charge material in rail cars onto railway), and various materials during unloading of tanker trucks. The Facility owner is not aware of any uncontrolled releases at the Facility.

The transfer of resin from tanker trucks in the Plant 1 resin unloading area results in minor spills near pump nozzles. In addition, cleaning tanks and totes in the bulk storage "materials storage"area reportedly results in spillage.

The current spill cleanup procedure consists of absorbing the spilled material with sand, collecting samples of the sand, and disposing of the sand appropriately based on the sample results.

Conditions of the "Materials Storage Area" and the "Resin Unloading Area" are presented in summary.

A. MATERIALS STORAGE AREA

Analytical results for the soil samples collected from the materials storage area identified low concentrations of a few VOCs (particularly acetone) and concentrations of various metals. VOCs detected were infrequently detected, at concentrations near quantitation limits. A summary of the analytes detected at AOI 26 is presented in Table 4.4 of the Final Corrective Measures Proposal Report, dated December 13, 2002. The majority of the organic constituents were detected in the foundry sand residual waste.

B. RESIN UNLOADING AREA

Analytical results for the soil samples collected from the resin unloading area identified low concentrations of formaldehyde. A summary of the analytes detected at AOI 26 is presented in Table 4.4 of the Final Corrective Measures Report, dated December 13, 2002. Samples from the resin unloading area were analyzed for phenol and formaldehyde only, based on the composition of the resin. All concentrations of these chemicals are below screening criteria for residential exposures at 10^{-5} risk.

AOI 27 – Aboveground Storage Tanks

Approximately 45 aboveground storage tanks (ASTs) are currently located throughout the Facility. Only those ASTs where releases have occurred are included in this AOI.

There were two #2 fuel oil tanks previously in operation. The first tank was located southwest of the current Hazardous Waste Storage Area and contained 200,000 gallons. This tank was removed in 1976. The second tank was located northeast of the current Hazardous Waste Storage tank was located northeast of the current Hazardous Waste Storage Area and had a capacity of 212,000 gallons. This tank was removed in 1996.

There was no visual evidence of release from the 212,000 gallon tank. However, soil sampling was conducted in the vicinity of the tank after it was removed.

In addition, various spills from ASTs have occurred, including:

- Resin spills from the #4 sand mix AST in the basement.
- Phosphoric acid from the former tanks between Plant 1 and the Waster Water Treatment Plant.

ASTs are and will continue to be used at the Facility. Existing ASTs are equipped with containment structures, and therefore future releases are not anticipated. A summary of the analytes detected at AOI 27 is presented in Table 4.5 of the Final Corrective Measures Proposal Report, dated December 13, 2002.

A. TWO RESIN TANKS IN PLANT 1

Analytical results for the soil samples collected in the vicinity of the two resin tanks in Plant 1 identified low concentrations of phenol and formaldehyde, which were below screening criteria at 10^{-5} risk or HQ of

1 for residential exposures. Samples in the vicinity of the two resin tanks in Plant 1 were analyzed for phenol and formaldehyde only, based on the composition of the resin.

B. WASTE OIL TANKS IN PLANT 1 MATERIAL CONTROL AREA

Analytical results for the soil samples collected from the Plant 1 material control area identified low concentrations of 1,1-dichloroethane (1,1-DCA), and concentrations of various metals.
All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for residential exposures at this AOI.

C. DIESEL TANK NEAR PLANT 1 WAREHOUSE

Analytical results for the soil samples collected near the Plant 1 warehouse identified low concentrations of various VOCs and SVOCs [particularly polycyclic aromatic hydrocarbons (PAHs)], low concentrations of the PCB Aroclor 1248, and concentrations of various metals. Most of the organics detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for residential exposures at this AOI.

AOIs Suitable for Industrial Land Use Without Further Remediation

Based on the investigation conducted under the RFI, no further remediation was warranted at six AOIs (AOI 5 - West Primary Settling Basin, AOI 6 - Secondary Settling Basin Ditch, AOI 10 - Waste Oil Storage Areas, AOI 13 - Drainage Ditch, AOI 19 - Former Disposal Area, and AOI 21 - Scrap Metal Handling Areas) as long as they are restricted to industrial use. The RFI data indicate that concentrations at these AOIs are lower than screening criteria based on 10^{-5} risk or HQ of 1 for industrial exposures and industrial land use. Similarly, based on upstream sample results collected under the RFI for the primary settling basins (AOIs 4 and 5), no further remediation was warranted at AOI 16 - Water Reservoir.

AOI 5 –WEST PRIMARY SETTLING BASIN

The West Primary Settling Basin began operating in 1952, and was built on foundry waste that had been placed in the area since 1948. It receives water from dust collectors, via the East Primary Settling Basin (AOI 4). Ferric sulfate was formerly added as a flocculent.

Sediments accumulated in this basin and necessitated the construction of the East Primary Settling Basin in 1963. Sludge from the East Primary Settling Basin was disposed of in the West Primary Settling Basin in the 1970s, but this material was relocated to the Landfill (AOI 7) in 1984. The West Primary Settling Basin has been dredged on various occasions. The sludge was disposed of in the Landfill (AOI 7). The drains and leachate collection system in the Landfill acted to de-water the sludge, and sludge has been de-watered adjacent to the basin since the early 1990s. In accordance with the permit for the Landfill, paint filter tests have been conducted on the sludge prior to disposal since 1993.

In the mid-1970s to early 1980s, water from the East Primary Settling Basin was discharged into the Secondary Settling Basin (AOI 6), since the West Primary Settling Basin contained too much sludge to allow an effective settling time. After the West Primary Settling Basin was dredged in the early 1980s, the piping was changed to the current flow path (i.e., East Primary Settling Basin to West Primary

Settling Basin to Water Reservoir).

The West Primary Settling Basin is currently operating, and closure is not anticipated. Chlorine dioxide is added periodically as an algaecide. This unit is dredged on an as-needed basis to maintain the required volume. Sludge removed from this basin is regularly sampled for six metals (chromium, copper, lead, manganese, nickel, and zinc) prior to de-watering and disposal in the Landfill (AOI 7).

Analytical results for the sediment and soil samples collected from the West Primary Settling Basin identified low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the sediment.

The only chemical with a concentration above industrial screening criteria is arsenic in a single borehole, at 24 to 25 feet bgs. The arsenic concentrations identified in the sediment sample for 28 to 36 feet bgs at the same borehole, and soil and sediment samples from the remaining borings are within site-specific soil background levels. The arsenic-contaminated sediment at 28 to 26 feet bgs is under approximately 8 feet of water that is maintained at this level as part of normal operations at the Facility. As such, exposure of workers to sediment at the bottom of the basin is not reasonably expected under current conditions.

AOI 6 –SECONDARY SETTLING BASIN

The Secondary Settling Basin (SSB) began operating in 1968, and was constructed in native soils with berms of foundry wastes. Seeps and overflows to the Maumee River were observed in 1976.

Prior to installation of the current conveyance pipes, ditches were used to convey wastewater to the SSB. The east and west ditches were hard piped in the late 1980s. The east ditch (AOI 13) was partially filled and is part of Area III of the Landfill (AOI 7). The west ditch was filled and the WTP was constructed in this area. Ferric sulfate was formerly added as a flocculent to improve solids removal

Materials have been periodically dredged from the SSB and placed in the North Perimeter Area (NPA) (AOI 18), and the Landfill. In 1994, a continuous dragline began operating in the ditch at the south end of the SSB. The drains and leachate collection system in the Landfill acted to de-water the sludge, and sludge has been de-watered adjacent to the basin since the early 1990s. In accordance with the permit for the Landfill, paint filter tests have been conducted on the sludge prior to disposal since 1993.

Contaminated wastewater solids were removed from the SSB and this area was clean closed in 1990. Groundwater monitoring data collected between 1994 and 1996 under the approved landfill monitoring plan was used to support clean closure of the SSB. Clean closure verification was submitted to Ohio EPA in September 1997 and approved by Ohio EPA on October 24, 1997.

The SSB is currently operational. Wastewater is conveyed via underground piping and phosphoric acid is added to prevent any further elevated leachable lead concentrations. Chlorine dioxide is periodically added as an algaecide.

A drag line is located in the ditch at the south end of the SSB. The remainder of the basin is dredged on an as-needed basis to maintain the required volume. Sludge removed from this basin is regularly sampled for six metals (chromium, copper, lead, manganese, nickel, and zinc) prior to de-watering and disposal in the Landfill (AOI 7).

Analytical results for the sediment samples collected from the ditch associated with the Secondary Settling Basin identified low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The detected concentrations were below the screening criteria for industrial land use.

The only chemical with concentrations above industrial screening criteria was lead in two sediment samples, which were collected from the influent ditch to the Secondary Settling Basin.
Potential exposure to lead-contaminated sediment at AOI 6 under current conditions is not significant. Further explanation of risk presented by lead exceedances at AOI 6 is explained in the Summary of Facility Risk section of this document.

AOI 10 – WASTE OIL STORAGE AREA(S)
The former Waste Oil Storage Area north of Plant 1 was used to store approximately one hundred 55-gallon drums of used motor oil, transmission fluids and antifreeze, and various equipment. Drums of hazardous waste, including spent solvents, were also temporarily accumulated in this area when storage space at the Hazardous Waste Storage Area (AOI 9) was unavailable. There are no documented releases from this unit, but U.S. EPA indicated that drums were observed to be uncovered during one U.S. EPA inspection. Surface water drainage in this area is toward ditches on the west and east sides of the pad, adjacent to the railway tracks, which drain to storm sewer manholes located within the concrete pad or to the west.

Another Waste Oil Storage Area may have been located north of Plant 2, in an area that is currently unpaved.

The current Waste Oil Storage Area has been located inside the southeastern corner of Plant 1 since 1998 and is used to store motor oil, transmission fluid, and anti-freeze.

For approximately 20 years, every shipment of waste oil (approximately 3,000 gallons) has been sampled for PCBs and metals that can be detected by the Toxicity Characteristic Leaching Procedure (TCLP). Composite samples are collected from each group of approximately 20 drums and totes, and individual containers are sampled if unacceptable levels of metals or PCBs are reported in the composite sample. The oil in the drums and totes is pumped out into a tanker. PCBs have occasionally been reported in waste oil samples.

A. FORMER WASTE OIL STORAGE AREA NORTH OF PLANT 1

Analytical results for the soil samples collected from the Former Waste Oil Storage Area north of Plant 1 identified concentrations of various VOCs, PCBs, and metals. Most of the VOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

Analytical results for the sediment samples collected from the Former Waste Oil Storage Area north of Plant 1 identified low concentrations of various VOCs and SVOCs, and concentrations of various metals. Most of the VOCs and SVOCs detected were at concentrations near quantitation limits.

Analytical results for the sewer water samples collected from the Former Waste Oil Storage Area north of

Plant 1 identified low concentrations of various VOCs, SVOCs, and metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits.

B. FORMER WASTE OIL STORAGE AREA NORTH OF PLANT 2E

Analytical results for the soil samples collected from the Former Waste Oil Storage Area north of Plant 2E identified a concentration (near quantitation limits) of the VOC toluene (at BH6-00), concentrations (near quantitation limits) of various PAHs, and concentrations of various metals. The majority of the organic constituents were detected in the foundry sand residual waste.

C. FORMER WASTE OIL STORAGE AREA IN SOUTHEAST CORNER OF PLANT 1

Analytical results for the soil samples collected from the Former Waste Oil Storage Area in the southeast corner of Plant 1 identified low concentrations of a few VOCs, and concentrations of various metals. The majority of the organic constituents were detected in the foundry sand residual waste.

All of the constituent concentrations in AOI-10 are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure.

AOI 13 –DRAINAGE DITCH

The drainage ditch went into operation at the same time as Plant 2W. The ditch collected runoff from the waste treatment units, as well as leachate from the under drain system of the landfill, and conveyed this wastewater to the Secondary Settling Basin.

This drainage ditch was inspected on October 19, 1999. No evidence of chemical release to this ditch was observed and vegetation in the area included small trees.

Analytical results for the sediment samples collected from the Drainage Ditch identified low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were at concentrations near quantitation limits.

Analytical results for the surface water sample collected from the Drainage Ditch identified concentrations (near quantitation limits) of the VOCs toluene and 2-butanone, and concentrations of various metals. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure at this AOI.

AOI 16 – WATER RESERVOIR

The water reservoir was originally constructed in 1948 and occupied the southwest corner of the current footprint. The Water Reservoir receives water from the West Primary Settling Basin (AOI 5) by gravity flow, and water is also pumped from the Secondary Settling Basin (AOI 6) and directed to the Water Reservoir by an underground pipe. Water is pumped from the SSB on an as-needed basis to maintain 10 feet of free board in the SSB. The Water Reservoir was dredged in April 1994 and sludge was de-watered and disposed of in the Landfill (AOI 7). This unit is used as the water supply for the plant powerhouse. This unit is currently operating, and closure is not anticipated.

Based on sample results in the primary settling basins showing acceptable risk for AOI-5, and levels below residential standards for AOI-4, no sampling was conducted in this area of interest.

AOI 19 – FORMER DISPOSAL AREA

The Former Disposal Area consists of two areas east and southeast of the East Primary Settling Basin (AOI 4) and is located in Area III of the Landfill (AOI 7). This area is proposed for future expansion of the Landfill.

Area III of the Landfill (AOI 7) was formerly used for sludge disposal and staging of general debris. The area to the east of the East Primary Settling Basin was used for disposal of sludge from the primary settling basins. The area to the southeast of the East Primary Settling Basin was used for staging of tires and general debris (e.g., wooden pallets) sorted out of the foundry sand residual waste material disposed in the Landfill. The tires have been removed from this area.

Area III of the Landfill has not been used since approval was granted for disposal of foundry sand residual waste in this area. It is anticipated that this area will be developed as a solid waste landfill in the future. Groundwater sampling is currently being completed in this area under the approved landfill monitoring plan with the Ohio EPA. The Facility inspected this area on October 19, 1999 and observed sediment that was supporting vegetation including small trees.

Analytical results for the soil samples collected from the Former Disposal Area east of the East Primary Settling Basin identified generally low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. A summary of the analytes detected at AOI 19 is presented in the Final Corrective Measures Proposal Report dated December 13, 2002. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure at this AOI.

A. FORMER DISPOSAL AREA EAST OF THE EAST PRIMARY SETTLING BASIN

Analytical results for the soil samples collected from the Former Disposal Area east of the East Primary Settling Basin identified generally low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure at this AOI.

B. FORMER DISPOSAL AREA SOUTHEAST OF THE EAST PRIMARY SETTLING BASIN

Analytical results for the soil samples collected from the Former Disposal Area southeast of the East Primary Settling Basin identified generally low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected at concentrations near quantitation limits. All of the concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure at this AOI.

AOI 21 – SCRAP METAL HANDLING AREAS

The scrap metal handling areas at the Facility consist of the metal cut up area and the charge storage areas/crane bays. Scrap metal enters the Facility via rail cars, where it is reduced in size in the metal cut

up area and stored in the charge storage areas. Metal from construction and renovation activities is also transported to the cut up area where it is reduced in size and subsequently stored in the charge storage areas. Metal from the charge storage areas is weighed in the crane bays and used to charge the cupolas as needed.

The installation dates for the crane bays coincided with building construction. The metal cut up area has existed since at least the 1960s. The rail cars are known to have leaked cutting oil, depending on where the scrap metal originated.

The metal cut up area, the charge storage areas, and the crane bays are currently active. The metal cutup area and the charge storage areas are unpaved.

A. PLANT 2E CRANE BAY

Analytical results for the soil samples collected in the vicinity of the Plant 2E crane bay identified low concentrations of various VOCs and SVOCs, a low concentration of the PCB Aroclor 1254 (in one sample from BHAC-00), and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

B. PLANT 2W CRANE BAY

Analytical results for the soil samples collected in the vicinity of the Plant 2W crane bay identified low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

C. CUT-UP AREA

Analytical results for the soil samples collected in the vicinity of the cut-up area identified low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the VOCs and SVOCs detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

D. "A" FOUNDRY CRANEWAY

Analytical results for the soil samples collected in the vicinity of the "A" foundry craneway identified generally low concentrations of various VOCs (particularly BTEX), SVOCs (particularly PAHs), and PCBs, and concentrations of various metals. Most of the organics detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

E. #3 FOUNDRY CRANEWAY

Analytical results for the soil samples collected in the vicinity of the #3 foundry craneway identified generally low concentrations of various VOCs, SVOCs, and PCBs, and concentrations of various metals. Most of the organics detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

F. #4 FOUNDRY CRANEWAY

Analytical results for the soil samples collected in the vicinity of the #4 foundry craneway identified low concentrations of a few VOCs, low concentrations of various SVOCs, low concentrations of PCBs, and concentrations of various metals. Most of the organics detected were infrequently detected, at concentrations near quantitation limits. The majority of the organic constituents were detected in the foundry sand residual waste.

All concentrations are below screening criteria at 10^{-5} risk or HQ of 1 for industrial exposure at this AOI**.**

AOI's with Interim Corrective Measures

Based on RFI results, corrective measures were warranted under RCRA at AOI 20 - USTs and Associated Piping in Former Maintenance Area. Interim measures have been completed in this area. Early action was taken to accommodate redevelopment in the AOI 20 area.

Three AOIs , AOI 22 - BBC Furnace Area, AOI 23 - AJAX Furnace Area and AOI 24 - Other PCB Releases in Electrical Substations, proceeded directly to corrective action under TSCA. Interim measures have been completed in AOI 23-the AJAX furnace area and AOI 24 - Other PCB Releases in Electrical Substations. Interim corrective measures have been completed at AOI 22-BBC furnace area. Early action was taken consistent with final corrective measures to accommodate Facility processes.

AOI 20 - USTs and Associated Piping in Former Maintenance Area, AOI 22 - BBC Furnace Area, AOI 23 - AJAX Furnace Area, and AOI 24 - Other PCB Releases in Electrical Substations will be suitable for Industrial land use only, and will be deed restricted.

AOI 20-USTs And Associated Piping

The original objective of the RFI in AOI 20 was to investigate the area surrounding the former USTs and associated piping. During the investigation of AOI 20, free-phase product was encountered at one of the boreholes, located approximately 75 feet from the former USTs. No other boreholes contained free-phase product.

Analytical results of the free-phase product indicated the presence of chlorinated compounds. Exceedances of industrial screening criteria were observed. The former USTs did not contain chlorinated compounds. Chlorinated compounds may have originated from past use and/or storage of chlorinated solvents in this former maintenance area.

In the area where the impacted soil was located called the "pattern shop", analytical results for the characterization soil samples collected identified low concentrations of a few VOCs and SVOCs, and concentrations of various metals. Analytical results for the characterization soil samples collected in the material handling area identified elevated concentrations of various VOCs, particularly methyl cyclohexane and cyclohexane (petroleum degradation products), 1,1,1-TCA and its degradation products 1,1-DCA and 1,1-dichloroethene (1,1-DCE), and benzene, toluene, ethylbenzene, and xylene (BTEX); concentrations of a few SVOCs, notably 2-methylnaphthalene; low concentrations of the PCB Aroclors 1242 and 1254 (below 1 mg/kg); and concentrations of various metals. A summary of the analytes detected in characterization samples at AOI 20, and their location is presented in Table 4.12a of the Final Corrective Measures Proposal Report, dated December 13, 2002 . The majority of the organic constituents were detected in the upper 10 feet. No significant contaminant migration into the underlying clay till unit below 14 feet was identified. It should be noted that certain sample locations have been

excavated, the exact location can be found in Table 4.12b of the Final Corrective Measures Proposal Report, dated December 13, 2002.

Verification samples were taken at AOI- 20 after the excavation to verify post excavation concentrations. Analytical results for the verification soil samples identified concentrations of various VOCs and SVOCs, particularly the VOCs 1,1,1-TCA, 1,1-DCA, 1,1-DCE, and chloroform. All post-excavation concentrations of the constituents in AOI- 20 are below the industrial screening criteria of 10^{-5}.

AOI 22 - BBC Furnace Area

Investigations in the BBC furnace area were conducted separately from the RFI, to define the nature of remedial action necessary. Investigative activities consisted of the collection of concrete core samples, and underlying soil samples. Analytical results presented in the Corrective Measures Work Plan for BBC Furnace Area (CRA, August 16, 2002) indicated that PCB concentrations exceeded 50 mg/kg in the floors of the old and new capacitor rooms, and hydraulic pump room H 3/4. Analytical results indicated that the maximum PCB concentration identified in underlying soil samples was 0.21 mg/kg.

Corrective measures were implemented for this area are presented, in the Corrective Measures Work Plan for BBC Furnace Area (CRA, August 16, 2002). The interim measures for the floors and walls in the AOC meet TSCA requirements (40 CFR 761.30(p) and 40 CFR 761.61(a)). An institutional control will restrict the AOI to industrial use.

AOI-23 AJAX FURNACE AREA

Investigations in the AJAX furnace area were conducted separately from the RFI, as the decision was made to proceed immediately to interim measures. Investigative activities consisted of the collection of concrete core samples, refractory brick samples, wipe samples from metal surfaces, and underlying soil samples. Analytical results indicated that PCB concentrations exceeded 50 mg/kg in the floors of capacitor rooms, hydraulic room H-3, and the SE water pump room, and in the lower wall of capacitor room C-4. Analytical results indicated that none of the refractory brick samples exceeded 50 mg/kg PCB concentrations. Analytical results indicated that wipe sample results exceeded 100 μg/100 cm^2 in furnace rooms F-3 and F-4 on the cradle support structures. Analytical results indicated that the maximum PCB concentration identified in underlying soil samples was 0.62 mg/kg.

The Interim Measures Work Plan for the AJAX furnace area, was submitted to U.S. EPA on November 8, 2000, and accepted by the RCRA and TSCA program on April 12, 2001. Interim measures were completed as documented in the Interim Measures Report for Plant 2E AJAX Furnace Area (CRA, August 15, 2002). The interim measures for decontaminating the furnace cradles were approved by the TSCA program on September 6, 2001. An institutional control will restrict the AOI to industrial use.

AOI 24 –OTHER POTENTIAL PCB REALEASES

Various areas within the Facility contain electrical power supply and control equipment. Based on discussions with GM employees, a total of nine rooms were selected for sampling based on the probability of historical PCB releases. These consisted of four transformer substations (H5/H6, E1/E2, K, and M1/M2) throughout the Facility, two pre-heater control rooms (east and west) in Plant 2E, one capacitor room (AJAX) in Plant 1, and two power supply rooms (upper and lower) in Plant 1. All PCB-containing equipment was removed by December 2000. All material was properly disposed of as

PCB-contaminated waste.

Analytical results for the concrete core and wipe characterization samples collected from the electrical rooms where PCB leaks may have occurred identified various PCB concentrations in all rooms sampled with the exception of the pre-heater control rooms in Plant 2E. A summary of the PCB concentrations detected at AOI 24 is presented in Final Corrective Measures Proposal Report, dated December 13, 2002. PCB concentrations generally decreased with depth into the concrete. PCB concentrations are above the cleanup levels for low occupancy areas identified in 40 CFR 761.61 in the E1/E2, H5/H6, and M1/M2 transformer substations.

Delineation sample analytical results for the concrete core collected from outside the electrical equipment cages in transformer substations H5/H6 and M1/M2 identified PCB concentrations up to 1.5 ppm. PCB concentrations did not exceed the cleanup levels for low occupancy areas identified in 40 CFR 761.61.

On August 22, 2001, U.S. EPA requested that an additional investigation be completed outside of transformer substation E1/E2 to determine if PCBs migrated beyond the substation. A map showing suggested boring locations was provided to and approved by the U.S. EPA. Six soil samples and one duplicate were collected outside transform E1/E2 on August 29, 2001. No PCBs were detected in any of these samples.

Interim measures were completed as documented in the Interim Measures Report for AOI 24 - Electrical Substations (CRA, August 15, 2002). The interim measures meet the TSCA requirements (40 CFR 761.30(p) and 40 CFR 761.61(a)). An institutional control will restrict the AOI to industrial use.

SUMMARY OF FACILITY RISKS

Risk Associated With Soil and Sediment

The RFI investigation demonstrated that three areas of interest had significant exceedances of screening criteria. The soil characterization data were compared with screening criteria derived from the 2002 risk-based preliminary remediation goals (PRGs) published by U.S. EPA Region 9 for evaluating exposures in commercial/industrial settings. U.S. EPA Region 9 calculates these PRGs using conservative high end exposures of workers to soil in commercial/industrial settings, and a target cancer risk of 10^{-6} or 1 in 1,000,000 and a hazard quotient of (1). The use of screening criteria for evaluating exposures in commercial/industrial settings is appropriate because current and reasonably expected future land use a the Facility is industrial.

For the three AOIs that had individual constituents which exceeded screening criteria- AOI 5, AOI 6, and AOI 20-the human health risk was evaluated using conservative risk based screening criteria at the site.

At AOI-5, the West Primary Settling Basin, arsenic exceeded the industrial exposures screening criteria of 16mg/kg at 10^{-5} risk, with a maximum concentration of 48.4 mg/kg. The Arsenic was present in a bore hole at 24 to 25 feet below ground surface. The arsenic-contaminated sediment at the boring is under approximately 8 feet of water, that is maintained at this level as part of normal operations at the Facility. As such, exposure of maintenance and construction workers to sediment at the bottom of the basin would be limited. The cumulative cancer risk and hazard index for this AOI is 7×10^{-7} and 0.5 respectively. Arsenic was not detected in deeper samples of the bore hole containing the exceeding concentration. Concentrations of arsenic in the West Primary Settling Basin has no potential impact on groundwater.

At AOI-6, the Secondary Settling Basin, potential exposure of workers to lead-contaminated sediment is possible. Such potential exposure would be associated with maintenance activities around AOI 6. These potential exposures would be far lower than those assumed in the derivation of the 750 mg/kg criterion. As discussed in U.S. EPA guidance (1996), the criterion of 750 mg/kg was developed using a blood lead modeling methodology, and is intended to ensure protection of workers who contact contaminated soil during the entire workday for 219 days per year. Also, the criterion is intended to apply to the arithmetic mean lead concentration in an exposure area, to be consistent with the principles of the blood lead modeling approach used to derive the criterion. In the guidance from which the criterion of 750 mg/kg is taken, U.S. EPA actually provides a range of criteria from 750 mg/kg to 1,750 mg/kg, depending on the baseline blood lead distribution of the population around a particular site.

The mean lead concentration in sediment at AOI 6 is approximately 1,500 mg/kg. This concentration is within the 750 mg/kg to 1,750 mg/kg range of soil lead screening criteria recommended by U.S. EPA (1996). Also, the frequency of potential exposure of workers at the Facility to sediment at AOI 6 is expected to be much lower than the 219 days/year of exposure assumed in the U.S. EPA guidance. If the frequency of exposure to sediment at AOI 6 were half the assumed frequency of 219 days/year (i.e., approximately 110 days/year), the lead criterion would range from 1,500 mg/kg to 3,500 mg/kg. At this exposure frequency, the lead concentrations in sediment at AOI 6 would not represent a significant exposure. Currently, maintenance activities at the ditch consist primarily of keeping the ditch open by mechanical drag-lining approximately 1 to 3 days/week. This operation is performed using heavy equipment, so maintenance workers performing this work have little opportunity for direct contact with sediments in the ditch. Therefore, the frequency of actual exposure to sediment at AOI 6 is expected to be even lower than 110 days/year. Therefore, potential exposure to lead-contaminated sediment at AOI 6 under current conditions is not significant. The cumulative cancer risk and hazard index for this AOI is 3 x 10^{-6} and 1 respectively.

At AOI 20, the soil contaminated with chloroform and 1,1-DCE is under the concrete plant floor, so direct exposure of workers to the soil is not reasonably expected under current conditions. Institutional controls will be implemented to prevent direct contact to these constituents in the future. Potential exposure of workers via vapor intrusion is also not reasonably expected under current conditions. A training center has been constructed in the area of AOI 20, and includes elements that have eliminated or minimized potential for vapor intrusion. These elements include epoxy grout or oil resistant coating of the concrete floor and providing ventilation in accordance with building codes applicable to the use of the area as a combination of office space and industrial work space.

Exposure of workers during subsurface construction or maintenance in the area, if these activities were to occur, is possible. Although exposure to chloroform and 1,1-DCE is not anticipated under current and planned future development of this area, potential exposures under generic industrial development were evaluated. All concentrations of the constituents in AOI 20 are below the industrial screening criteria of 10^{-5}. The cumulative cancer risk and hazard quotient for AOI 20, based on maximum concentrations and 95 % Upper confidence limits (UCLs) is 1 x 10^{-5} and 0.4 respectively.

Cumulative cancer risk and hazard index's based on 95% UCLs or maximum detected concentrations is provided in Table 1.

Table 1
Cumulative Cancer Risk and HIs Based on Maximum Detected Concentrations

AOI	Matrix	Cumulative Risk	HI

04	Soil	1×10^{-9}	5×10^{-2}
05	Soil	7×10^{-7}	5×10^{-1}
10	Soil	3×10^{-6}	4×10^{-1}
11	Soil	2×10^{-7}	4×10^{-2}
19	Soil	5×10^{-6}	6×10^{-1}
20	Soil	1×10^{-5}	4×10^{-1}*
21	Soil	2×10^{-5}	6×10^{-1}*
22	Soil	6×10^{-7}	NA*
26	Soil	3×10^{-9}	5×10^{-4}
27	Soil	8×10^{-7}	7×10^{-2}
04	Sediment	4×10^{-6}	3×10^{-1}
05	Sediment	3×10^{-5}	1
06	Sediment	3×10^{-6}	1
10	Sediment	4×10^{-7}	2×10^{-1}
13	Sediment	2×10^{-6}	6×10^{-1}

*Cumulative risk were calculated using 95 % Upper Confidence Levels
*NA= No Carcinogens were detected at AOI-22.

Risk Associated With Groundwater

Groundwater in the uppermost aquifer at the GM-Defiance facility has been monitored by the Ohio EPA from 1993 to the present. No risk have been associated with the uppermost aquifer based on the data collected.

The perched water zone has concentrations above the drinking water standards, but is not a current source of drinking water, or potable water. A leachate collection system has been put in place to prevent migration of the perched water zone from the North Perimeter Area (NPA) before it migrates into the Maumee River. The USEPA will monitor wells MW-24S, MW-25S, and MW-12S to verify that constituent concentrations in the perched zone does not impact the Maumee River.

Risk Associated With Surface Water

Surface water samples were collected from AOIs 10 and 13.

At AOI 10, the Former Waste Oil Storage Area(s), surface water drainage in this area is toward ditches on the west and east sides of the pad, adjacent to the railway tracks, which drain to storm sewer manholes located within the concrete pad or to the west. AOI 13, the Drainage Ditch, is a small on-site ditch that collects precipitation runoff from its immediate vicinity; water ponds in the ditch occasionally because the ditch has no outlet.

The surface water characterization data from these AOIs are not compared with generic risk-based surface water criteria. Generic surface water criteria are based on drinking water use of surface water, while the potential exposed are workers who perform occasional maintenance at the AOIs. As such, the evaluation of surface water is compared with groundwater screening criteria that were developed for exposure scenarios that are similar to the exposure scenarios at these AOIs.

These surface water characterization data from AOIs 10 and 13 are compared with the generic groundwater contact criteria developed by the Michigan Department of Environmental Quality (MDEQ 2001). These criteria are based on protection of maintenance or utility workers who might occasionally contact groundwater. They assume workers will contact contaminated water on their feet, hands, and half the lower legs for 2 hours per day, 20 days per year, for 21 years. Potential exposure of workers to surface water at AOI 10 (in manholes and catch basins) and at AOI 13 (drainage ditch) is expected to be lower.

Ecological Risk

Ecological risk was evaluated by performing a habitat characterization. Of the 27 AOIs at the site, 3 were excluded per the Consent Order (AOIs 7, 12, and 18), 5 were clean closed under RCRA (AOIs 1, 2, 3, 6, and 8), and 14 AOIs pose negligible risk of adverse effects to ecological receptors either because they provide no habitat resources or because exposure pathways are incomplete. No further ecological assessment is warranted for these AOIs. Five AOIs were targeted for habitat characterization as areas where ecological receptors and complete exposure pathways may exist: the East and West Primary Settling Basins—AOIs 4 and 5, the Drainage Ditch—AOI 13, the Water Reservoir—AOI 16, and the Former Disposal Area—AOI 19.

No further ecological assessment is recommended for the East and West Primary Settling Basins (AOIs 4 and 5) and Water Reservoir (AOI 16) because these basins are not natural surface water features, but are wastewater treatment and water management units that are an integral part of the functioning of the facility. Aquatic habitats, if any, are limited and disturbed (i.e., periodically dredged), and any exposure by loafing waterfowl is expected to be limited and incidental.

No further ecological assessment is recommended for the Drainage Ditch (AOI 13) and Former Disposal Area (AOI 19) because these areas are scheduled to become Area III of the Landfill within the next 3 to 5 years; therefore, any currently existing habitat and exposure pathways for ecological receptors will be eliminated under this future use.

SCOPE OF CORRECTIVE ACTION

The studies contained in the RFI and CMS showed that surface soils, subsurface soils, sediments, and air do not pose a significant risk to people who are likely to be exposed to those media under current and reasonably anticipated future uses.

The major hydrogeologic units at the Site consist of the clay till unit and the underlying silty sand unit. In addition, the clay till unit is overlain by up to 10 feet of discontinuous silty sand in the eastern portion of the Site, and up to 50 feet of foundry sand fill in the northern portion of the Site. The surficial silty sand and foundry sand fill are not continuous and do not form distinct hydrogeologic units. The uppermost

aquifer is the silty sand unit, which overlies the Ohio Shale. The hydraulic conductivities of the units have been estimated as follows: the foundry sand fill, 4×10^{-5} to 1×10^{-4} cm/s; the clay till unit, 1×10^{-8} to 7×10^{-7} cm/s; and the silty sand unit, 4×10^{-7} to 1×10^{-3} cm/s.

The water table is located at approximately 6 to 38 feet below ground surface (bgs), and intersects the foundry fill, the surficial silty sand, and the clay till unit. Groundwater elevations in the water table observation wells indicate that shallow groundwater flow is to the north, toward the Maumee River. The silty sand unit is a confined aquifer below the uppermost saturated zone. The proximity of the Maumee River and the elevation of the potentiometric surface in the silty sand unit indicate that the aquifer likely discharges to the river.

Water in the shallow perched zone had elevated levels of metals and VOC's above maximum concentration limit's (MCL's). The shallow perched zone is not a drinking water supply, and is not currently or reasonably expected to be a drinking water supply in the future. The north perimeter of the site, where groundwater flows, is bounded by the North Perimeter Area (AOI-18), and the permitted Landfill (AOI-7).

The Ohio EPA currently has groundwater monitoring programs in place for the permitted Landfill. The wells for the Landfill's monitoring network are located in the uppermost aquifer of the silty sand unit at the Facility. The monitoring program for the Landfill has up-gradient wells (MW-10DR, MW-11D, MW-17D, MW-12D) and down-gradient wells (MW-3ER, MW-6D, MW-12DR, MW-15D, MW-16D, MW-16D, MW-18DR, MW-21D, MW-22D) which is sampled for four basic parameters (Temperature, Turbidity, PH, and Specific conductivity) and 18 constituents. Based on the two most recent years of data (metals data for 2000/2001 and organics data from 1996/1997), no constituents were detected in groundwater above screening criteria. Ohio EPA agreed that further sampling of organics was unnecessary.

The North Perimeter Area (NPA) is undergoing closure with the Ohio EPA. As part of the NPA closure project, a leachate collection system will be installed at the toe of the slope of the NPA. The four well that are located adjacent to the NPA (MW-12S, MW-13S, MW-14S, and MW-SR) will be removed during the closure construction activities. The leachate collection system is designed to eliminate the migration of water in the shallow perched zone to the river. GM will continue to monitor four shallow monitoring wells MW-24S, MW-25S, and MW15-S, as a part of the final remedy for the corrective action program. These wells will be sampled for various metals and VOC's.

SUMMARY OF CORRECTIVE MEASURE SCENARIOS

The corrective measure scenarios analyzed to address soil and groundwater contamination at and from the GM-Defiance Facility are presented below.

Alternative 1: No Further Action, With Future Land Use Unrestricted

Alternative No. 1 results in no additional risk reduction at the site. The no further action alternative would provide hazardous constituent reduction through ongoing natural attenuation processes in the groundwater and soil. However, the constituent reduction will not be monitored or documented (i.e., no evaluation of effectiveness). No institutional or engineering controls are associated with this action. This

alternative is technically and administratively implementable, as no engineering or administrative procedures are required.

Alternative 2: No Further Remediation, With Future Land Use Suitable for Industrial Use, Including Institutional Controls Restricting the Contaminated Portions of the Facility to Industrial Use.

Alternative No. 2 restricts the contaminated portions of the facility to industrial use**.** GM-Defiance would place a notation on the deed for the property that designates areas of the facility that have been impacted by previous activities. For ease of implementation, the entire facility (excluding AOI's 7-Landfill, AOI 12 Sedimentation Basin, AOI 18-North Perimeter Area) will be deed restricted.

Institutional controls have the potential to reduce the risk of exposure with minimal impact on industrial operations. No further remediation would be required in these areas.

Alternative 3: Implementation of a Perched Water Monitoring Program with Contingency Plans

This alternative includes monitoring of the shallow perched water zone, to verify that concentrations of contaminated perched water migrating off-site are not impacting the Maumee River.

GM-Defiance would be required to collect shallow perched water samples from wells to sample water flowing off-site. The samples would be analyzed for previously identified compounds of interest. GM-Defiance would collect and report the sample analysis to US EPA quarterly, for a minimum of two years. The sampling results would be subject to statistical analysis, with US EPA oversight, to evaluate trends and identify exceedances of the Ohio EPA surface water quality standards . The monitoring will also determine whether any migration of off-site contamination is significant. The planning of this remedy option would include provisions for additional remedial actions if perched water contaminant concentrations exceed the Ohio EPA surface water quality standards The contingency plans would be outlined in the Corrective Measures Implementation (CMI) report that GM-Defiance will prepare after US EPA has chosen the final remedy. The CMI report is subject to US EPA approval.

In two years, following the conclusion of this proposed sampling period, GM and EPA will review the data in comparison to the Ohio Surface Water Quality standards to determine if the perched water zone is impacting the Maumee River. At that time, the decision will be made to suspend the sampling (if no potentially unacceptable impact to surface water can be demonstrated) or adjust the sampling frequency (if continued sampling is determined to be necessary) or contingent measures.

EVALUATION OF PROPOSED REMEDY

The most significant potential risks have already been addressed by the interim measures described above. The proposed remedy to address remaining contaminated media at and from the GM-Defiance Facility is:

AOI's 4, 11, 26 and 27:

- Alternative 1: No Further Action, With Future Land Use Unrestricted

AOI' 5,6,10,13,16, 19,20, 21, 22, 23, and 24:

♦ Alternative 2: No Further Remediation, With Future Land Use Suitable for Industrial Use, Including Institutional Controls Restricting the Contaminated Portions of the Facility to Industrial Use.

Site Wide

♦ Alternative 3: Ground water monitoring with contingency plan

The following discussion profiles the performance of the proposed remedy against four general remedy standards and the five remedy decision factors, noting how it compares to the other options under consideration.

General Standards

1. Overall protection The combination of the alternatives would provide adequate protection of human health and the environment. The shallow perched water at the GM-Defiance Facility site does not represent a current threat, nor is it a current or potential source of drinking water. Alternative 2 ensures that unacceptable exposures will continue to be prevented. Institutional controls are implemented as a means of preventing and/or controlling potential exposure to identified releases. Direct contact with affected soil and perched water across the site will be mitigated through the implementation of institutional controls. Alternative 3 will provide data that would implicate any impact to the Maumee River, with contingency plans that would require remediation if concentration were to exceed surface water quality standards, which are protective of the benthic community.

2. Attainment of media cleanup standards The first alternative of no further action does not provide any performance monitoring.

   The plan to monitor the shallow groundwater quality is in keeping with US EPA policy that outlined three components for groundwater cleanup: achieving groundwater cleanup levels, establishing the points of compliance, and establishing a remediation time frame. Monitoring of the perched water zone will provide data that will be screened against the Ohio EPA surface water quality standards. The continued monitoring will confirm whether levels will continue to be below the these standards. Analytical data collected will be used to verify and /or refine the groundwater transport model. Appropriate actions can then be taken to ensure that any migration of contaminants from the source area will not adversely affect the Maumee River. Secondly, the points of compliance are defined by the monitoring wells. Thirdly, GM-Defiance can petition to reduce monitoring if they can demonstrate that perched water concentrations are decreasing or remaining stable at acceptable levels over time. This time frame is appropriate given that the contaminated shallow perched water zone is not currently used, use is not expected to occur in the future, and is not considered an exposure pathway to on-site workers and downgradient receptors on the river.

3. Controlling the sources of releases Alternatives 1, 2, and 3 do not add additional source controls beyond those already constructed as interim measures and existing groundwater measures under the permit. Additional source control is not deemed necessary based on results from the RFI and

CMS. As stated previously, the 1,1-DCE, and chloroform contamination resulted from an underground storage tank usage, and has been excavated. Because of the extent of excavation and the considerable decrease in soil concentrations, the main source of contaminations is considered to be removed, and is considered under control. Contingent measures under Alternative 3, if required, will add further control.

4. Compliance with applicable standards for waste management Except for minimal amounts of purge water obtained from monitoring wells during quarterly sampling events, no wastes will be generated as part of the perched water monitoring program in Alternative 3, nor would waste generation occur from Alternative 1 or 2. Any contingencies under Alternative 3 will also comply with all applicable standards.

Remedy Decision Factors

1. Long-term reliability and effectiveness Alternative 3 involves observation of the affected perched water. Information gathered in previous investigations indicate that monitoring will be sufficient to keep track of perched water contamination. In the event perched water conditions change, contingency plans will be implemented by methods that will be outlined in the Corrective Measures Implementation Report. Furthermore, GM-Defiance is committed to the long-term maintenance of institutional controls to protect on-site receptors. Institutional controls would be implemented (i.e., deed restrictions) in such a way to make sure they continue with the land if the site is sold.

2. Reduction of toxicity, mobility, or volume of wastes The interim measures have already provided significant reductions. Alternative 1 and 2 would not reduce the toxicity, mobility, or volume of wastes. Alternative 3, shallow groundwater monitoring will capture the results of any physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in the perched water. These in-situ processes include, biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants.

3. Short-term effectiveness The surrounding community will not be affected by the remedial efforts of Alternative 1, 2, and 3. In addition, the on-site workers are not at risk of exposure to the impacted perched water.

4. Implementability Alternatives 1, 2, and 3 can be implemented with minimal engineering and administrative procedures, and with no impact to the surrounding community. Additionally, the field work required in the monitoring program is routine. The analysis required after sampling events is routine and the reports should not be cumbersome to prepare. Contingency measures such as containment or active remediation of perched groundwater are also implementable.

5. Cost No capital expenditures or operation and maintenance costs are associated with Alternative 1. Institutional controls for Alternative 2 will have minimal cost. Alternative 3 will have minimal cost, unless contingent measures are later required.

Based on information currently available, the proposed remedy provides the best balance of corrective measure scenarios with respect to the evaluation criteria. U.S. EPA believes that the proposed remedy is

protective of human health and the environment and will effectively control the exposure to contaminants in groundwater, and soil. All applicable standards regarding surface water protection would be addressed and complied with during the corrective measures implementation process.

PUBLIC PARTICIPATION

U.S. EPA solicits input from the community on the corrective measures proposed for cleanup of contaminated groundwater, soil, and sediment. The public is also invited to provide comment on corrective measure scenarios not addressed in this Statement of Basis. U.S. EPA has set a public comment period from June 8, 2004 through July 23, 2004, to encourage public participation in the selection process.

The Statement of Basis for the GM-Defiance Facility is available at the following locations:

Defiance Public Library
320 Fort Street
Defiance, Ohio 43512
Ph # (419) 782-1456, Fax # (419) 782-6235

U.S. EPA, Region 5
Waste, Pesticides and Toxics Division Records Center
77 West Jackson Boulevard, 7th Floor
Chicago, Illinois 60604-3590
(312) 886-0902
Hours: Mon-Fri, 8:00 a.m. - 4:00 p.m.

After consideration of the comments received, U.S. EPA will select the remedy and document the selection in the Final Decision and Response to Comments. In addition, public comments will be summarized and responses provided. The Final Decision and Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the Administrative Record.

To send written comments or request technical information on the General Motors Defiance Facility, please contact:

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To request information on the public comment period process, please contact:

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